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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,286	01/03/2001	Dirk Coldewey		4672
7590	08/27/2004		EXAMINER	
Dirk Coldewey 828 Western Dr Santa Cruz, CA 95060			DODDS, HAROLD E	
			ART UNIT	PAPER NUMBER
			2177	

DATE MAILED: 08/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	09/755,286	COLDEWEY, DIRK
Examiner	Art Unit	
Harold E. Dodds, Jr.	2177	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 03 January 2001.

2a)  This action is **FINAL**.                            2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## **Disposition of Claims**

4)  Claim(s) 1-18 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 1-9 and 13-18 is/are rejected.

7)  Claim(s) 10-12 is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on 03 January 2001 is/are: a)  accepted or b)  objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5)  Notice of Informal Patent Application (PTO-152)  
6)  Other: \_\_\_\_\_.  
\_\_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

1. The drawings filed on 03 January 2001 are acceptable subject to correction of the informalities indicated in 37 CFR 1.58 and 1.77. In order to avoid abandonment of this application, correction is required in reply to the Office action. The correction will not be held in abeyance.

Drawings are required to be submitted separately from the Specification. Under 37 CFR 1.58, the MPEP states:

(a) The specification, including the claims, may contain chemical and mathematical formulas, but shall not contain drawings or flow diagrams. The description portion of the specification may contain tables; claims may contain tables either if necessary to conform to 35 U. S. C. 112 or if otherwise found to be desirable.

Likewise, under 37 CFR 1.77, the MPEP states:

(a) The elements of the application, if applicable, should appear in the following order:

- (1) Utility application transmittal form.
- (2) Fee transmittal form.
- (3) Application data sheet (see § 1.76).
- (4) Specification.
- (5) Drawings.
- (6) Executed oath or declaration.

### ***Specification***

2. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 15-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The concept of "discontinuing the level-order traversal when a number of subtrees sufficient for effective software pipelined traversal has been achieved' is not found in the specification.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-9 and 13-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. For claim 1 the phrase "said prefetch distance being determined experimentally by the programmer, computed using prior art, or by the compiler" is indefinite and may not be implemented without undue experimentation.

7. Claim 15 appears to have the structure of an independent claim. It is unclear whether the phrase "then proceeding with a traversal according to claim 13" refers to traversal of a tree constructed as a forest of trees or traversal as claimed by claim 1 since claim 13 is subordinate to claim 1. A simple solution would be to delete the referral back to claim 13 and to insert the appropriate language in its place.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pieper et al. (U.S. Patent No. 6,675,374), Huang et al. (U.S. Patent No. 6,009,265), and Knittel et al. (U.S. Patent No. 6,266,733).

10. Pieper renders obvious independent claim 1 as follows:

“...determining the prefetch distance...” at col. 10, lines 6-10.

“...said prefetch distance being determined...” at col. 10, lines 6-10.

“...or by the compiler...” at col. 13, lines 63-65.

“...inserting prefetch instructions into the traversal loop body...” at col. 4, lines 59-65.

Pieper does not teach the use of parallel data structures and the pipelining of the traversal.

11. However, Huang teaches the use of parallel data structures as follows:

“...creating a parallel data structure consisting of a plurality of partitions (N)...” at col. 5, lines 54-59 and col. 8, lines 20-21.

“...across the N partitions of the data structure...”

It would have been obvious to one of ordinary skill at the time of the invention to combine Huang with Pieper to provide parallel data structures in order to perform operations in a parallel mode and speed up the processing of the operation. Pieper and

Huang have related applications and use many technologies in common. Pieper and Huang teach the use of computers, the use of databases or data structures, the use of data sets or partitions, the use of parallel processing, and the compiling of data. Pieper provides compilers, prefetch instructions, and parallel processing, and Huang provides parallel processing over multiple partitions.

Huang does not teach the pipelining of the traversal.

12. However, Knittel teaches pipelining a traversal as follows:

“...pipelining the traversal...” at col. 12, lines 57-61.

“...required in order to traverse said data structure...” at col. 12, lines 57-61.

“...using the aforementioned pipelined traversal...” at col. 12, lines 57-61.

It would have been obvious to one of ordinary skill at the time of the invention to combine Knittel with Pieper and Huang to provide pipelining of traversals in order to perform traversals of partitions in a parallel mode and speed up the processing of the operation. Pieper, Huang, and Knittel have related applications and use many technologies in common. Pieper, Huang, and Knittel teach the use of computers, the use of databases or data structures, the use of data sets or partitions, and the use of parallel processing. Pieper provides compilers, prefetch instructions, and parallel processing, Huang provides parallel processing over multiple partitions, and Knittel provides pipelining the traversal of data sets.

13. As per claim 2, the “...data structure is provided as part of a library...,” is taught by Pieper at col. 5, lines 58-65, col. 6, lines 65-67, and col. 7, line 1.

14. As per claim 3, the "...data structure defined by an application is transformed by a compiler..." is taught by Pieper at col. 5, lines 58-65, col. 4, lines 66-67, and col. 13, lines 63-65, the "...said compiler performing the necessary steps to modify..." is taught by Pieper at col. 13, lines 63-65 and col. 9, lines 65-66, the "...corresponding traversal code..." is taught by Knittel at col. 12, lines 57-61, and the "...to perform software pipelined prefetching..." is taught by Pieper at col. 12, lines 43-46.

15. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pieper, Huang, and Knittel as applied to claim 1 above, and further in view of Ott (U.S. Patent No. 6,760,902).

As per claim 4, the "...data structure is generated..." is taught by Huang at col. 5, lines 54-59,

but the "...by a set of macros..." is not taught by either Pieper, Huang, or Knittel.

However Ott teaches the use of sets of macros as follows:

"...Finally, block 516 uses a set of C++ macros to create the actual functions declared by statement 512 and define exactly which data and functions within the class are to be "visible"-- meaning that they can operate in the user interaction space..." at col. 12, lines 3-7.

It would have been obvious to one of ordinary skill at the time of the invention to combine Ott with Pieper, Huang, and Knittel to use macros in order to use a standard method of including code during a compilation process and gain a wider acceptance of the system. Pieper, Huang, Knittel, and Ott have related applications and use many

technologies in common. Pieper, Huang, Knittel, and Ott teach the use of computers, the use of databases or data structures, and the use of data sets or partitions and Pieper, Huang, and Ott teach the use of compilers. Pieper provides compilers, prefetch instructions, and parallel processing, Huang provides parallel processing over multiple partitions, Knittel provides pipelining the traversal of data sets, and Ott provides macros.

16. As per claim 5, the "...method of creating such a data structure..." is taught by Huang at col. 5, lines 54-59 and the "...is supplied as part of a class library in an object oriented system..." is taught by Ott at col. 2, lines 52-58.

17. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pieper, Huang, and Knittel as applied to claim 1 above, and further in view of Tirumalai et al. (U.S. Patent No. 6,634,024).

As per claim 6, the "...which performs no data structure traversal..." is taught by Knittel at col. 12, lines 57-61, the "...but which does generate prefetch instructions..." is taught by Pieper at col. 2, lines 62-64, but the "...steady state loop is preceded by a prologue..." is not taught by either Pieper, Huang, or Knittel.

However, Tirumalai teaches the use of steady state loops and prologues as follows:

"...If the trip count is relatively large, kernel 104 will last much longer than prologue 102 or epilogue 106. The primary performance metric for a modulo-scheduled loop is the iteration interval. It is a measure of the steady state throughput for

loop iterations. Smaller iteration interval values imply higher throughput..." at col. 2, lines 13-18.

It would have been obvious to one of ordinary skill at the time of the invention to combine Tirumalai with Pieper, Huang, and Knittel to use steady state loops and prologues in order to use a standard method providing code for a compilation process and gain a wider acceptance of the system. Pieper, Huang, Knittel, and Tirumalai have related applications and use many technologies in common. Pieper, Huang, Knittel, and Tirumalai teach the use of computers, the use of data sets or partitions, and the use of parallel processing and Pieper, Huang, and Tirumalai teach the use of compilers. Pieper provides compilers, prefetch instructions, and parallel processing, Huang provides parallel processing over multiple partitions, Knittel provides pipelining the traversal of data sets, and Tirumalai provides steady state loops and prologues.

18. As per claim 7, the "...steady state loop is followed by an epilogue..." is taught by Tirumalai at col. 2, lines 13-18, the "...in which no prefetch instructions are performed..." is taught by Pieper at col. 2, lines 62-64, and the "...but in which traversal of the data structure continues and possibly completes..." is taught by Knittel at col. 12, lines 57-61.

19. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pieper, Huang, and Knittel as applied to claim 1 above, and further in view of Duluk, Jr. et al. (U.S. Patent No. 6,717,576).

As per claim 8, the "...is associated with the list to maintain the state of the traversal..." is taught by Knittel at col. 12, lines 57-61,

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the "...to which an element is added is maintained as a variable (H)..." is taught by

Pieper at col. 8, lines 14-16 and col. 9, lines 1-15,

but the "...said linked list is partitioned into a plurality of sublists (P)..."

the "...state vector (S)..."

the "...of each sublist..."

and the "...and the state of the last sublist..." are not taught by either Pieper, Huang, or

Knittel.

However, Duluk teaches the use of sublists, linked lists, and state vectors as follows:

"...Furthermore, the pipeline state information can be split into a multiplicity of sub-lists, and additions to each sub-list occurs only when part of the sub-list changes..." at col. 24, lines 28-30.

"...This is accomplished by building a linked list of pointers per tile, wherein each pointer in a respective tile pointer list 330, corresponds to the last vertex packet for a primitive that covers part of the corresponding tile..." at col. 102, lines 20-23.

"...The 3D Command Decode also interprets and saves the current state vector required to send a vertex packet when a vertex command is detected in the queue..." at col. 72, lines 12-14.

It would have been obvious to one of ordinary skill at the time of the invention to combine Tirumalai with Pieper, Huang, and Duluk to use linked lists and sublists in order to use a standard list data structures and gain a wider acceptance of the system. Furthermore, it would have been obvious to one of ordinary skill at the time of the invention to combine Tirumalai with Pieper, Huang, and Duluk to use state vectors in order to preserve the settings of each pipeline and provide a more rational system.

Pieper, Huang, Knittel, and Duluk have related applications and use many technologies in common. Pieper, Huang, Knittel, and Duluk teach the use of computers, the use of databases or data structures, the use of data sets or partitions, and the use of parallel processing. Pieper provides compilers, prefetch instructions, and parallel processing, Huang provides parallel processing over multiple partitions, Knittel provides pipelining the traversal of data sets, and Duluk provides sublists, linked lists, and state vectors.

20. As per claim 9, the "...additions to the end of the list..." is taught by Duluk at col. 104, lines 57-61,

the "...are added to the end of the sublist..." is taught by Duluk at col. 104, lines 57-61 and col. 24, lines 28-30,

the "...indexed by I modulo P..." is taught by Pieper at col. 11, lines 48-51 and col. 11, lines 65-67,

the "...and the list header..." is taught by Duluk at col. 281, lines 20-22,

and the "...index H updated to H + 1 modulo P..." is taught by Pieper at col. 11, lines 48-51 and col. 11, lines 65-67.

21. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pieper, Huang, and Knittel as applied to claim 1 above, and further in view of Bjork ("Binary Trees").

As per claim 13, the "...tree is constructed as a forest of trees..." is not taught by either Pieper, Huang, or Knittel.

However, Bjork teaches the use of a forest of trees as follows:

"...In our discussion of general trees and forests, we noted that we can represent any general tree/forest by an equivalent binary

tree; and we saw that operations on a tree can be mapped to equivalent operations on the binary tree equivalent...." at p. 1, sec. I.A.

It would have been obvious to one of ordinary skill at the time of the invention to combine Bjork with Pieper, Huang, and Duluk to use forests of trees in order to generalize the transversal of trees to the transversal of forests and gain a wider acceptance of the system. Pieper, Huang, Knittel, and Bjork have related applications and use many technologies in common. Pieper, Huang, Knittel, and Bjork teach the use of databases or data structures, Pieper and Bjork teach the use of trees, and Huang and Bjork teach the use of nodes. Pieper provides compilers, prefetch instructions, and parallel processing, Huang provides parallel processing over multiple partitions, Knittel provides pipelining the traversal of data sets, and Bjork provides forests of trees.

22. As per claim 14, the "...a plurality of trees (P)..." is taught by Pieper at col. 10, lines 62-64, the "...an array in which to store a pointer..." is taught by Pieper at col. 7, lines 22-25 and col. 11, lines 9-13, the "...to the root node of each tree..." is taught by Bjork at p. 1, sec. I.C. the "...variable (T) holding the value..." is taught by Pieper at col. 3, lines 38-42, the "...of the last tree into which a node was inserted..." is taught by Bjork at p. 4, sec. IV.D. and p. 1, sec. I.A., the "...method of adding a node to the forest..." is taught by Bjork at p. 4, sec. IV.D. and p. 1, sec. I.A.,

the "...by assigning the value  $T + 1$  modulo  $P$  to the variable  $T$ ..." is taught by Pieper at col. 3, lines 38-42 and col. 11, lines 65-67,

the "...and using a normal insertion into the tree..." is taught by Bjork at p. 4, sec. IV.D. and p. 1, sec. I.A.,

the "...indexed by the value of  $T$  thus updated..." is taught by Pieper at col. 11, lines 48-51 and col. 3, lines 38-42,

and the "...method of traversing the forest in pre-order fashion..." is taught by Bjork at p. 2, sec. II.A.1.

23. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pieper et al. (U.S. Patent No. 6,675,374), Knittel et al. (U.S. Patent No. 6,266,733), and Bjork ("Binary Trees").

24. Pieper renders obvious independent claim 15 by the following:  
"...maintaining an array of pointers..." at col. 7, lines 22-25 and col. 11, lines 9-13.  
"...the aforementioned array of pointers thereby containing the pointers..." at col. 7, lines 22-25 and col. 11, lines 9-13.  
"...pointed to by the aforementioned array..." at col. 7, lines 22-25 and col. 11, lines 9-13.

Pieper does not teach the use of pipelined traversals, the use of level-order traversals, the use of forests, and the use of subtrees.

25. However Knittel teaches the use of pipelined traversals as follows:  
"...sufficient for effective software pipelined traversal has been achieved..." at col. 12, lines 57-61.

“...to which software pipelined traversal can be applied...” at col. 12, lines 57-61.

“...across which software pipelined traversals are performed...” at col. 12, lines 57-61.

It would have been obvious to one of ordinary skill at the time of the invention to combine Knittel with Pieper to provide pipelining of traversals in order to perform traversals of partitions in a parallel mode and speed up the processing of the operation. Pieper and Knittel have related applications and use many technologies in common. Pieper and Knittel teach the use of computers, the use of databases or data structures, the use of data sets or partitions, and the use of parallel processing. Pieper provides arrays of pointers and Knittel provides pipelining the traversal of data sets.

Knittel does not teach the use of level-order traversals, the use of forests, and the use of subtrees.

26. However, Bjork teaches the use of level-order traversals, the use of forests, and the use of subtrees as follows:

“...initiating a level-order traversal starting at the root...” at p. 2, sec. II.A.1.

“...to nodes in the tree in the course of the level-order traversal...” at p. 4, sec. IV.D. and p. 2, sec. II.D.

“...discontinuing the level-order traversal...” at p. 2, sec. II.D.

“...when a number of subtrees...” at p. 1, sec. I.C.

“...to the roots of the trees of a forest...” at p. 2, sec. II.A.1. and p. 1, sec. I.A.

“...then proceeding with a traversal according to claim 13...” at p.2, sec. II.D. and p. 1, sec. I.A.

“...wherein subtrees...” at p. 1, sec. I.C.

“...of subtrees constitute the forest...” at p. 1, sec I.C. and p. 1, sec I.A.

It would have been obvious to one of ordinary skill at the time of the invention to combine Bjork with Pieper and Knittel to provide level-order traversals, forests, and subtrees in order to perform traversals of forests, which are analogous to the traversal of binary trees and use a standard traversal method. Pieper and Knittel have related applications and use many technologies in common. Pieper, Knittel, and Bjork teach the use of databases or data structures and the use of partitions or sets and Pieper and Bjork teach the use of trees. Pieper provides arrays of pointers, Knittel provides pipelining the traversal of data sets, and Bjork provides level-order traversals, forests, and subtrees.

27. As per claim 16, the “...children of each node...,” is taught by Bjork at p. 5, sec. IV.D.3.a. and p. 4, sec. IV.D.,  
the “...encountered in the course of the level order traversal...,” is taught by Bjork at p. 2, sec. II.D.,  
and the “...are prefetched...,” is taught by Pieper at col. 4, lines 56-65.

28. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pieper, Knittel, and Bjork as applied to claim 16 above, and further in view of Papadopoulos (U.S. Patent No. 5,412,799).

As per claim 17, the “...queue is used to hold the nodes of the current level...,” is taught by Bjork at p. 2, sec. II.D.2.b. and p. 4, sec. IV.D.,  
the “...of an in-order traversal of the tree...,” is taught by Bjork at p. 2, sec. II.D. and p. 2, sec. II.D.2.b.,

the "...said nodes being added to said queue..." is taught by Bjork at p. 4, sec. IV.D. and p. 2, sec II.D.2.b.,

the "...as they are encountered in the course of the traversal of each level..." is taught by Bjork at 2, sec. II.D.,

the "...second queue is used to hold pointers..." is taught by Bjork at p. 2, sec II.D.2.b. and p. 1, sec. I.C.1.,

the "...to the children of the nodes at the current level..." is taught by Bjork at p.5, sec. IV.E.3.a. and p.2, sec. II.D.2.b.,

the "...as the traversal transitions from one level to the next..." is taught by Bjork at p. 2, sec. II.D.2.b.,

the "...and the forest is constructed from the subtrees rooted at the nodes..." is taught by Bjork at p. 1, sec. I.A., p.1, sec. I.C., and p. 4, sec. IV.D.,

and the "...pointed to by the contents of the aforementioned two queues..." is taught by Bjork at p. 1, sec. I.C.1. and p. 2, II.D.2.b.,

but the "...said queues swap roles..." is not taught by either Pieper, Knittel, or Bjork.

However, Papadopoulos teaches the swapping of roles by queues as follows:

"...This signal makes the queue 34 appear as if it is empty, and as such, tokens are not dequeued by the processor. Other control signals for the processing elements include a force-to-enqueue signal that forces data into the queue and a swap line that causes a swap of the roles of the two queues 32 and 34..." at col. 8, lines 21-24.

It would have been obvious to one of ordinary skill at the time of the invention to combine Papadopoulos with Pieper, Knittel, and Bjork to provide swapping of roles by queues in order to reduce the requirements for multiple queues and simplify the

operation of the system. Pieper, Knittel, Bjork, and Papadopoulos have related applications and use many technologies in common. Pieper, Knittel, Bjork, and Papadopoulos teach the use of databases or data structures and the use of data sets or partitions, Pieper, Knittel, and Papadopoulos teach the use of computers and the use of parallel processing, and Pieper, Bjork, and Papadopoulos teach the use of loops. Pieper provides arrays of pointers, Knittel provides pipelining the traversal of data sets, Bjork provides provides level-order traversals, forests, and subtrees, and Papadopoulos provides swapping of roles by queues.

29. As per claim 18, the "...children of each node..." is taught by Bjork at p. 5, sec. IV.D.3.a. and p. 4, sec. IV.D., the "...encountered in the course of the level order traversal..." is taught by Bjork at p. 2, sec. II.D., and the "...are prefetched..." is taught by Pieper at col. 4, lines 56-65.

***Allowable Subject Matter***

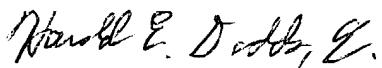
30. Claims 10-12 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

***Conclusion***

31. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harold E. Dodds, Jr. whose telephone number is (703)-305-1802. The examiner can normally be reached on Monday - Friday 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Breene can be reached on (703)-305-9790. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Harold E. Dodds, Jr.  
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August 23, 2004



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